Preliminary Draft

Biological Resources Mitigation Implementation and Monitoring Plan for the Cosumnes Power Plant, Sacramento County, California

Prepared for

SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)

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Prepared by

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

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1.0 Introduction

The following sections present project background information, the location and a description of project features, and the purpose of this Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). *This preliminary draft has been prepared at the request of CEC staff. Since there are no Conditions of Certification (COC) or other environmental permits and approvals that have been issued for the CPP project to date, this BRMIMP does not contain CEC Conditions of Certification or other agency permit conditions. The BRMIMP will be updated to include COC and permit conditions as this information becomes available.*

1.1 Background

Sacramento Municipal Utility District (SMUD or District) proposes to develop approximately 30 acres of vacant land for a 1,000-megawatt (MW) natural gas-fired power plant (the Cosumnes Power Plant [CPP]) and associated linear facilities in Sacramento County, California. An Application for Certification (AFC) for CPP was prepared under Title 20 of the California Code of Regulations and was submitted to the California Energy Commission (CEC) on September 13, 2001. The CEC staff assessment is the functional equivalent to the California Environmental Quality Act (CEQA) environmental impact report (EIR).

The CEC is the state lead agency for the project and reviews and modifies the project for compliance with laws, ordinances, regulations, and standards (LORS) required for the project, as well as any mitigation and protection measures for sensitive biological resources. The AFC presents a detailed description of all aspects of the project and addresses potential project impacts to sensitive biological resources in the project area. A Biological Assessment (BA) is being prepared under Section 7 of the Endangered Species Act (ESA) that further refines the analysis of impacts to special-status species thatcould potentially occur, within the CPP project area. The BA will be developed in compliance with the ESA and all applicable regulations and will be submitted to the U.S. Environmental Protection Agency (USEPA) or U.S. Army Corps of Engineers (USACE), which ever is the lead Federal agency for the project. The Lead agency will initiate formal consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) in April 2002. A Biological Opinion from both the USFWS and NMFS is forthcoming. The USACE was consulted with respect to potential impacts to jurisdictional waters of the U.S. and wetlands.

1.2 Project Site Location

The project site is located 25 miles southeast of the City of Sacramento, on the eastern edge of the Sacramento Valley in Sacramento County (see Figure 1-1). The project would be located on a 30-acre parcel about 1500 feet south of the existing non-operational Rancho Seco Plant (Rancho Seco or RSP) on a portion of a 2,480-acre site owned by SMUD. This

location will allow the reuse of existing water systems, switchyards, and transmission lines that are already in place at Rancho Seco. The project is at 150 feet elevation, at the base of the foothills that rise to the Sierra Nevada east of the project. The water supply line and electrical transmission line are in the same location and habitat as the project. The site is located on the Goose Creek quadrangle, United States Geological Survey (USGS) at Township 6N, Range 8E.

CPP would be served by a 24-inch diameter natural gas pipeline beginning in south Sacramento where it ties into the SMUD system near the Carson Ice-Gen site. It crosses several roadways and is adjacent to railroad rights-of-way in the south County, crosses under several foothill streams and irrigation ditches typical of the Sacramento Valley, and then lies adjacent to the road right-of-way (ROW) along Twin Cities Road and Clay East Road, in predominantly hay fields, alfalfa fields, and vineyards. The gas pipeline alignment is located within the Clay, Galt, Elk Grove, Bruceville, and Florin quadrangles.

The region's climate is Mediterranean, characterized by hot, dry summers and cool, wet winters. Summer high temperatures frequently exceed 100 degrees Fahrenheit (°F); winter temperatures are generally mild, with fewer than 20 freezing days per year. Rainfall averages 16.7 inches per year, most of which falls between November and March.

1.3 Project Description

CPP will consist of a nominal 1,000 megawatt (MW) combined-cycle natural gas-fired power plant. The plant will be constructed in two phases, each consisting of 500 MWs. Each phase will have two combustion turbines, one condensing steam turbine, and two heat recovery steam generators (HRSG). CPP site preparation will require realignment of intermittent streams to the north and east sides of the site.

The CPP project will include the following associated features:

- A new 0.4-mile long 230-kV transmission line will extend north northeast from the proposed switchyard at the CPP site to the existing Rancho Seco Nuclear facility site's 230-kV switchyard. Approximately 3 new steel pole transmission towers will be required.
- Natural gas for the facility will be delivered via a new 24-inch diameter pipeline extending 26.5 miles from SMUD's existing transmission backbone pipeline network that currently terminates at the Carson Ice-Gen Facility in Elk Grove.
- Water for cooling will be supplied by a new 0.4-mile pipeline connection to the existing 66-inch diameter water line that conveys water from the Folsom-South Canal. Industrial wastewater from the plant will be discharged to Clay Creek in accordance with NPDES discharge requirements.
- Domestic water and process makeup water will be supplied by diverting a portion of the cooling water from the Folsom-South Canal to a package treatment plant.
- A stormwater detention basin and discharge outfall structure to Clay Creek are located in the northwest corner of the CPP site.

- A temporary 20-acre construction laydown area would be located in agricultural land south of the CPP site. This area will be restored after construction is complete.

1.4 Sensitive Biological Resources

Sensitive biological resources in the CPP project area include habitats for special-status species, wetlands, and waterways. Wildlife habitats include annual grassland, pasture, agricultural fields, and riparian woodland. Wetlands and waters of the U.S. include vernal pool, intermittent and perennial streams (Clay, Badger, and Laguna creeks), and the Cosumnes River. The gas pipeline will cross the Cosumnes River Preserve, which supports habitat for special-status plants and wildlife as well as resident and migratory wildlife species. Developed areas, primarily along the gas pipeline, include county roadways, residential houses, and commercial/industrial areas.

1.4.1 Vernal Pools and Vernal Pool Species

Vernal pool plant and invertebrate species occur in vernal pools and seasonal wetlands within annual grasslands or pastures and may occur in or near the project area. These species include plants such as legenere, downingia, orcutt grass, and navarretia that are endemic to vernal pools, as well as fairy shrimp and tadpole shrimp. The federal threatened vernal pool fairy shrimp (*Branchinecta lynchi*) and federal endangered vernal pool tadpole shrimp (*Lepidurus packardi*) are short-lived crustaceans, approximately 1-inch long, that live in vernal pools and occasionally ditches or swales that have similar hydrology to vernal pools. They exist as cysts (eggs) in the summer, and hatch when hydrated by winter rains. They are known to occur in vernal pools east of Rancho Seco, and north of the project site.

1.4.2 Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*) is a listed federal threatened species limited to the Central Valley of California. VELB are approximately 3/4 of an inch long and have long, segmented antennae. The wings of female VELB are dark metallic green with red trimmings and males may have a similar appearance or have red-black wings with dark green spots. The VELB is dependent on its host plant, elderberry (*Sambucus* spp.). The larvae normally occupy elderberry stems, trunks, and roots greater than 1 inch in diameter. Larvae and pupae remain in the stems for 1 to 2 years until they emerge as adults in the spring. Adult emergence is from April through June, about the same time the elderberry produces flowers. External sign of the species on elderberry plants is primarily limited to exit holes created by adults chewing their way out of the stems after pupation. CNDDB records indicate this species is likely to occur along the Cosumnes River or any crossing where elderberries are present. Preliminary surveys conducted during routing efforts have found a few elderberry shrubs along the proposed pipeline corridor. SMUD anticipates that all such shrubs can be avoided during construction activity; consequently, potential impact to the beetle can be eliminated.

1.4.3 Fish Species in Cosumnes River Watershed

Steelhead, salmon, and splittail occur in the Cosumnes River watershed. The Central California steelhead (*Oncorhynchus mykiss*) Evolutionarily Significant Unit (ESU) is a federal proposed endangered population (Federal Register, 1996 and 1997). The Central Valley

steelhead migrate from the Pacific Ocean through the Delta to spawn in the Sacramento and San Joaquin River basins. Different genetic strains of steelhead can be found in the river systems most months of the year. The Cosumnes River is used during migration by adult spring- and fall-run chinook salmon (*Oncorhynchus tshawytscha*), proposed as Federal endangered and Federal threatened, respectively. Chinook salmon occur in the Sacramento-San Joaquin Delta year-round as adults and/or juveniles. Adult chinook salmon migrate upstream from the Pacific Ocean to faster waters of Central Valley rivers, spawn in gravel nests, and die. Adult upstream migrants occur in the Sacramento-San Joaquin Delta in four "runs" or peak periods: fall, late fall, winter, and spring. The duration of these four runs overlap; therefore, adult chinook can be found in the Delta throughout the year. Juvenile chinook salmon from all four runs emigrate through the Delta during cool weather from October through June (USBR 1997). The Cosumnes River contains spawning habitat for Sacramento splittail (*Pogonichthys macrolepidotus*), a federal threatened species. It is endemic to California's Central Valley, is most abundant in the Suisun Bay and Marsh region (USFWS 1995). Peak spawning occurs from March through May in sloughs and other shallow, slow-moving water habitats (USFWS 1995). Fish in the rivers are vulnerable to sedimentation from construction activities inside the banks and to adverse changes in water quality.

1.4.4 California Tiger Salamander

California tiger salamander (*Ambystoma californiense*) is a federal Candidate species and California Species of Special Concern. California tiger salamander is known from the San Joaquin valley, where it is found in annual grassland and oak woodland habitats with vernal pools or ponds without predatory fish. These habitats that hold water for 4 to 6 consecutive months may be used as breeding ponds for California tiger salamander. Adults inhabit underground burrows (they commonly use ground squirrel burrows) or cracks during aestivation (summer dormancy). California tiger salamander can travel ½ mile or more from aestivation sites to breeding ponds. Migration to breeding ponds occurs following warm winter and spring rains from October through May (Jennings 1994). California tiger salamander occur in the general project vicinity, and could potentially cross the site and linear extensions during dispersal from aquatic breeding sites. Potential adult aestivation habitat exists in the project region and along the pipeline in underground burrows near seasonal wetlands.

1.4.5 Western Pond Turtle

Western pond turtle (*Clemmys marmorata* and *Clemmys marmorata*) is considered federal Species of Concern and California Species of Special Concern. They are found in suitable aquatic habitats throughout California west of the Sierra-Cascade crest. They require permanent or nearly permanent water, such as ponds, lakes, streams, or irrigation canals. They overwinter under water or on land when water temperatures are below 15°C, from October or November until spring. Mating begins in April or May, but can occur year-round (Jennings and Hayes 1994). Suitable habitat for Western pond turtle occurs in the riparian corridor of Badger and Laguna Creeks and Cosumnes River and they have been reported in Clay Creek and ponds in the vicinity of the CPP project area.

1.4.6 Giant Garter Snake

Giant garter snake (*Thamnophis gigas*) is a Federal and California threatened species. They live year-round in the irrigation canals, rice fields, and marshes of the Cosumnes River Preserve. They spend most of their time in or very near water, where they forage for fish and frogs. Giant garter snakes hibernate in animal burrows above floodwaters from October through April. Giant garter snakes are sensitive to loss of habitat and are vulnerable to earth moving construction equipment, especially during hibernation. Riparian and aquatic habitats along the Cosumnes River support habitat for giant garter snake and they may occur in other small tributaries and drainage ditches in the area.

1.4.7 Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is a California threatened species that nests along the Cosumnes River and large isolated trees along farm roads from March through September. There is evidence to indicate that the population that breeds in California is distinct from those in the central United States and may warrant additional protection. They forage for small birds and mammals in crop fields and grassland habitats. Most Swainson's hawks winter in Central and South America. Swainson's hawks are sensitive to loss of forage and nesting areas and may, , abandon nests if disturbed by construction activities. The annual grassland and most agricultural habitat through which the pipeline passes is considered foraging habitat for Swainson's hawk, although none have been observed specifically at the CPP site. Riparian trees along the creeks and river could provide suitable nest sites.

1.4.8 Western Burrowing Owl

Western burrowing owl is a federal Species of Concern and a California Species of Special Concern. Optimum burrowing owl habitat consists of open grassland or prairie with short vegetation and an abundance of mammal burrows. Burrowing owls prey on small mammals, insects, and crayfish, and can feed on carrion. Short vegetation may increase prey availability, enhance predator detection by the owls, and attract burrowing mammals that provide nest sites for burrowing owls. Burrowing owls are known to nest in squirrel burrows along railroad tracks and roadside areas, and could also be present near the pipeline during construction. Small mammal burrows occur along the railroad track berm, in annual grassland areas, and in areas bordering agriculture fields.

1.4.9 Raptors, Waterfowl, and Migratory Birds

Raptors, waterfowl, and migratory birds (neo-tropical birds, geese, ducks, herons, shorebirds, cranes, etc.) use the Pacific Flyway, as a major winter migration route. The bald eagle (*Haliaeetus leucocephalus*), a Federal threatened and California endangered species, could forage along the Cosumnes River and flooded areas in the winter. The peregrine falcon (*Falco peregrinus anatum*), a Federal and California endangered species, and the greater sandhill crane (*Crus canadensis tabida*), a California threatened species, spend winters foraging in the Central Valley. The American bittern (*Botaurus lentiginosus*), a Federal species of concern, and other herons and egrets forage in the agricultural fields and irrigation canals. Raptors such as white-tailed kite, red-tailed hawk, red-shouldered hawk, Cooper's hawk, American kestrel, and Northern harrier occur year-round in the project area. The riparian areas could provide nesting habitat for these species as well as for resident

songbirds, waterfowl, herons, egrets, and bittern. Riparian corridors are also used by migratory during winter migrations.

1.5 Construction Schedule

SMUD expects to begin construction of the CPP facility in the fall (4th Quarter) of 2003 and begin operation of Phase 1 in 2005. The natural gas pipeline construction would encompass two dry seasons, between spring of 2003 and summer 2004, when low water flows are expected in the Cosumnes River and tributaries, and to reduce potential environmental impacts.

1.6 Purpose of the BRMIMP

The purpose of the Biological Resource Mitigation Implementation and Monitoring Plan (BRMIMP) is to describe how the Applicant will implement mitigation measures such that actions authorized, funded, or carried out by state or federal lead agencies are not likely to jeopardize the continued existence of endangered or threatened species. The protection and mitigation measures developed for endangered or threatened species will also benefit federal and state species of concern (species that are being considered for listing by the agencies).

The BRMIMP describes mitigation measures and guidance for implementation of the measures to protect biological resources within the CPP project area. These measures apply to all temporary and permanent construction areas and operations of CPP and are intended to fulfill the requirements of the Conditions of Certification identified in the CEC Final Decision and all conditions imposed by the regulatory agencies such as the USFWS, CDFG, NMFS, and ACOE. These conditions are listed in Section 3.0. The Applicant's employees and contractors shall adhere to these measures during construction, operation, and maintenance of CPP and associated linear facilities under direction and guidance of the Designated Biologist and Biological Monitor.

Proposed construction and operation impact areas are shown and described as the Implementation Areas in Section 4.0. This BRMIMP also includes a description of the persons responsible for compliance of the project conditions. The BRMIMP may be modified as necessary both during the pre-construction survey phase and construction implementation.

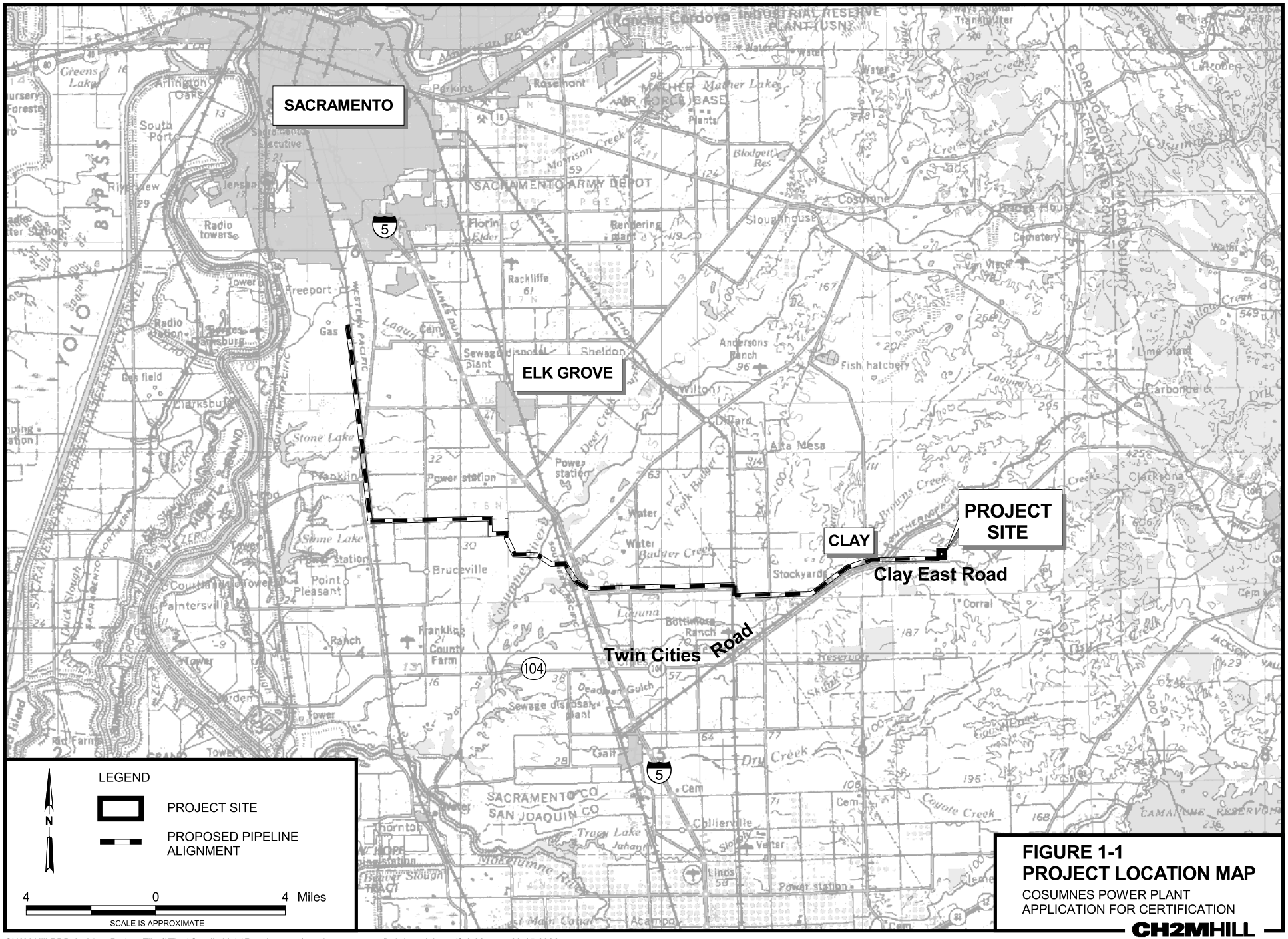

FIGURE 1-1
PROJECT LOCATION MAP
COSUMNES POWER PLANT
APPLICATION FOR CERTIFICATION

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2.0 Responsible Individuals

The following sections identify the individuals who will implement and monitor the BRMIMP and defines their responsibilities and authority.

2.1 California Energy Commission Compliance Project Manager

The CEC Compliance Project Manager (CPM) is responsible for overseeing compliance of all Conditions of Certification for the CPP project on behalf of the permitting and regulatory agencies. The CPM is designated by the CEC and has the following authority and reporting responsibilities:

- Communicate regularly with the CPP Compliance manager to ensure that the project proponents understand and implement the Conditions of Certification.
- Responsible for determining that those mitigation measures that are implemented meet both the letter and the intent of the Conditions of Certification.
- Receive and provide timely review of monthly and annual compliance reports from the CPP Compliance Manager.
- Inform the CPP Compliance Manager of potential non-compliance and issues that may not have been addressed, and provide CPP the necessary information to take responsive action.
- Inform the CEC if violations of the Conditions of Certification occur that would potentially require an enforcement action.

2.2 CPP Compliance Manager

The CPP Compliance Manager (CM) is responsible for overseeing compliance of all environmental Conditions of Certification for the CPP project on behalf of the project proponent. The CM is designated by the District as its representative and has the following authority and reporting responsibilities:

- Communicate regularly with and report progress to CEC CPM.
- Coordinate with Designated Biologist to ensure compliance with the Conditions of Certification in the BRMIMP and resolve potential biological resource issues.
- Supervise the implementation of all Conditions of Certification.
- Receives and reviews monthly and annual compliance monitoring reports submitted by the Designated Biologist that describe mitigation monitoring activities.
- Evaluates whether BRMIMP implementation is in compliance with mitigation measures and Conditions of Certification.

- Ensures that mitigation measures are effective in minimizing impacts to sensitive biological resources.
- The CM will coordinate with the CEC CPM and forward the biological resources monthly and annual compliance reports.

2.3 Designated Biologist

The Designated Biologist is responsible for implementing the BRMIMP and providing direct assistance to CPP in avoiding impacts to natural resources. The Designated Biologist must meet the following qualifications, and shall have the following authority and reporting responsibilities:

- Must meet the minimum qualifications outlined in the Conditions of Certification BIO-1 of the CEC's Commission Decision for the CPP project (resumes are presented in Appendix A).
- Must be approved by the CEC CPM at least 90 days prior to the start of groundbreaking activities.
- Advise CPP's Site Superintendent or Project Engineer on the implementation of the biological resources Conditions of Certification.
- Prepare and implement a Worker Environmental Awareness Training (WEAT) Program.
- Supervise and ensure implementation of the mitigation measures.
- Consult with CEC and natural resource agencies on potential biological issues and remedial actions.
- Advise project construction workers if there are changes in the environmental protection plans.
- Notify the District and the CEC CPM of non-compliance with any condition and the corrective actions taken, and advise the construction and operations engineer when to stop and resume construction in sensitive areas.
- Have the authority to stop work if project proponents do not comply with mitigation measures outlined in the BRMIMP.
- Maintain written records of Monthly Compliance Reports to the CPP CM that are forwarded to the CEC CPM.
- Submit monthly and annual reports to the CEC that document compliance with the mitigation and monitoring measures.

The Designated Biologist for the CPP project construction is:

[To be determined]

Qualifications:

Degree:
Field biology experience:
Field experience in project area:
Education and experience for required tasks:

2.4 Biological Monitor

The Biological Monitor is responsible for assisting the Designated Biologist in implementing the BRMIMP and providing direct assistance to CPP in avoiding impacts to natural resources. The Biological Monitor shall have the following authority and reporting responsibilities:

- Conducts the day-to-day compliance monitoring in the field during construction activities under the supervision of the Designated Biologist.
- Supervise or conduct mitigation and monitor compliance of mitigation measures, especially in areas requiring avoidance of sensitive habitats and/or species.
- Coordinates scheduling and potential BRMIMP issues between the construction supervisor and Designated Biologist.
- Presents the Worker Environmental Awareness Training Program.
- Reports compliance or violations of mitigation measures to the Designated Biologist.
- Advises CPP's Site Superintendent or Project Engineer on the implementation of the biological resources Conditions of Certification
- Maintains written daily logs and prepares Monthly Compliance Reports for submittal to the CPP CM that are forwarded to the CEC CPM.

The Biological Monitor for the CPP project construction is:

[To be Determined]

Qualifications:

[Forthcoming]

2.5 Regulatory Agency Personnel

Regulatory agency personnel are responsible for enforcing state and federal laws protecting sensitive species and natural resources. Staff from these agencies generally have broad authority to monitor and evaluate projects implemented under permits authorized by them, and can take enforcement actions at any time violations occur. Generally, these staff represent the following agencies, with the associated authority:

- The U.S. Environmental Protection Agency (USEPA) is (*to be confirmed*) the lead federal agency for the CPP project and is responsible for ensuring the project complies with all

federal laws and regulations. The USEPA issues the Prevention of Significant Deterioration (PSD) permit.

- The U.S. Army Corps of Engineers (USACE) is responsible for activities authorized under the Clean Water Act, Section 404 permit for wetland fill or impacts to waters of the U.S. The Corps also administers Section 10 of the Rivers and Harbors Act for construction in or under navigable waterways.
- The U.S. Fish and Wildlife Service (USFWS) is responsible for protecting federally listed endangered and threatened fish and wildlife species, and actions taken pursuant to a Federal Endangered Species Act Section 7 Incidental Take authorization. This would include measures included in the project description or mitigation implementation intended to avoid, minimize, or compensate for adverse impacts to federally listed or candidate species.
- The National Marine Fisheries Service (NMFS) is responsible for protecting federally listed anadromous fish species, including Central Valley steelhead, and the Spring-, Winter-, Fall-, and Late Fall-runs of chinook salmon.
- The California Department of Fish and Game (CDFG) is responsible for protecting species listed under the California Endangered Species Act, construction activities authorized under a Streambed Alteration Agreement, or incidental take authorized under a Fish and Game Code Section 2081 or 2080.1 agreement.
- The California Regional Water Quality Control Board (CRWQCB) is responsible for protecting beneficial uses of surface water under the Clean Water Act, Section 401 permit for Water Quality protection.

The agencies will receive copies of the relevant monitoring reports that detail compliance with the permits and authorizations issued for the project. These agencies may also conduct unannounced site visits to ensure compliance with project conditions.

3.0 Conditions of Certification

Conditions of Certification concerning protection of biological resources for the CPP project are described in the following environmental documents from the natural resource agencies and the CEC.

- California Energy Commission (CEC) Final Staff Assessment and Commission's Final Decision
- United States Environmental Protection Agency (USEPA) PSD permit
- United States Fish and Wildlife Service (USFWS) Biological Opinion (BO) for CPP
- National Marine Fisheries Service (NMFS) Biological Opinion for CPP
- United States Army Corps of Engineers (USACE) Clean Water Act (CWA) Section 404 Wetland Permits (Nationwide Permit 7) for pipeline construction and for stormwater outfall structure in Clay Creek
- California Department of Fish and Game (CDFG) Streambed Alteration Agreement (SAA) or waiver for stormwater outfall structure in Clay Creek and gas pipeline under Cosumnes River and Badger Creek
- CDFG Incidental Take Authorization or Consistency Determination under Section 2081 or 2080.1 of the Fish and Game Code
- California Regional Water Quality Control Board (CRWQCB) CWA Section 401 Water Quality Certification and/or waiver.

Table 3-1 presents the conditions each agency requires of CPP to ensure CPP project impacts to biological resources will not jeopardize the continued existence of endangered or threatened species.

TABLE 3-1
Biological Resources Conditions of Certification from Natural Resource Agencies for the Sacramento Municipal Utility District Project

Agency	Condition	Responsible Party	Authorization or Permit
[To be inserted upon issuance by regulatory agencies]			

3.1 Worker Environmental Awareness Training

A Worker Environmental Awareness Training program will be instituted for all CPP personnel and subcontractors who will be working on the CPP project sites. This program includes visual and written materials and identifies the potential impacts that could occur

from construction, operation, and maintenance activities of the CPP. The training will inform all personnel of the requirements to follow to protect sensitive biological resources in the CPP project area. Workers will receive environmental awareness training prior to beginning investigation or construction activities that could adversely affect biological resources. All personnel who receive training will sign a form declaring that they understand and will adhere to the requirements of the project. The CPP Worker Environmental Awareness Training program is outlined in Appendix B.

3.2 Plan Modification Process

Although every effort has been made to address all potential biological impacts, it is possible that unforeseen circumstances may present themselves. This BRMIMP contains mitigation and implementation measures that protect biological resources from project impacts to the maximum extent feasible. However, it is possible that unforeseeable project or regulatory changes could occur before or during construction. Project changes could be required if current construction plans are found to be unsuitable for the project. Regulatory changes could occur if a non-listed species becomes listed under the federal and state Endangered Species Acts and is found in the project area. Some of these or other changes would require modifications and/or additions to the BRMIMP.

If it is necessary to change mitigation or implementation measures, the CEC CPM will notify the District and the Designated Biologist in writing that a change in project design (engineering, construction methods, etc.) may require a change in mitigation measures and/or implementation measures. The District and the Designated Biologist will then submit a Change Order within 30 days that outlines specific changes or suggestions that will minimize impacts from a change in construction methods or to newly listed species. Within 14 days, the District and the Designated Biologist will then receive authorization from the CEC (and other agencies if required) for the project changes. All requests and approvals will be in writing and included in the Monthly Compliance Reports.

4.0 Permits Required for the CPP Project

The following permits related to biological resources must be acquired prior to construction on the CPP project site:

1. USFWS Biological Opinion for impacts to federally listed species
2. NMFS Biological Opinion for impacts to anadromous fish in Cosumnes River and associated tributaries.
3. CDFG Section 2080 or 2080.1 of Fish and Game Code authorization for impacts to state listed species.
4. CDFG Streambed Alteration Agreement (SAA) for construction of stormwater and wastewater outfall within the streambed, and for horizontal directional drilling under waterways.
5. Clean Water Act (CWA) Section 404 permits from USACE for realigning the stream, filling vernal pool habitat, and construction of gas pipeline and stormwater outfall near waterways.
6. A RWQCB CWA Section 401 Water Quality Certification or waiver is a condition of the USACE 404 permit and authorizes construction near waterbodies.
7. A RWQCB National Pollutant Discharge Elimination System (NPDES) is required to use and discharge water during construction, discharge cooling wastewater from the CPP site to Clay Creek, a tributary to Cosumnes River, and to operate the stormwater outfall. These discharges must meet the water-quality criteria for biota under the NPDES permit(s).

5.0 Project Impacts and Mitigation Measures for Sensitive Biological Resources within the CPP Project Area

CPP project impacts to sensitive biological resources are presented in the following sections. Table 5-1 (located at the end of this section) presents a summary of the impacts by project feature. Mitigation and protection measures established for special-status species and habitats in the CPP project areas is also presented in the following sections.

5.1 Cosumnes Power Plant Site, Electric Transmission Line, Water Supply and Discharge Pipelines, and Temporary Construction Laydown Area

This section describes the proposed project activities and sensitive species on the CPP site and linear extensions to the adjacent Rancho Seco facility. The natural gas pipeline is discussed separately in Section 5.2.

Project construction activities include CPP site preparation, creek realignment, installation of water pipelines, and electric transmission line. The site laydown area is proposed immediately south of the CPP site. The following bullet items briefly describe the impacts for each project feature at the CPP site and linear extensions:

1. Construction of CPP will require 30 acres of annual grassland be leveled and elevated for the CPP footprint, an access road, and a 1.5-acre stormwater detention pond (Figure 5-1). These features will result in the permanent loss of 30 acres of annual grassland that includes 0.01 acre of vernal pool habitat.

2. Preparation of the CPP site also requires permanent realignment of 2,800 feet of intermittent streams. The streams currently run from south to north through the center of the site and will be realigned to the north and east sides of the site.

3. The 800-foot-long water supply pipeline will extend to the Rancho Seco plant. It will require a 75-foot construction corridor resulting in temporary disturbance to 1.3 acres of pasture, annual grassland, and seasonal swale.

4. The 200-foot-long wastewater discharge pipeline to Clay Creek would result in temporary disturbance to 0.3 acre of pasture, annual grassland, and seasonal swale.

5. Construction of the 200-foot-long stormwater discharge pipeline would result in temporary disturbance to 0.3 acre of pasture, annual grassland, and seasonal swale. The associated outfall feature in Clay Creek would result in permanent impacts to 0.2 acre of riparian habitat.

6. Construction of the poles for the 800-foot long electric transmission line and stringing the conductors would result in temporary impacts to 0.3 acre of grassland. The footings of the power poles would result in the permanent loss of less than 0.01 acre of annual grassland.

Construction of linears and Phase 1 will take place within two years. Site construction for the Phase 2 will continue for approximately 2 years.

5.2 Natural Gas Pipeline

The following section describes the proposed project activities, restrictions on construction, and sensitive species that occur along the natural gas pipeline corridor from the Carson Ice-Gen pipeline terminus to the proposed CPP site. The natural gas pipeline alignment is located in mostly rural and agricultural areas.

Project construction activities include gas pipeline horizontal directional drill (HDD) and open cut trenching. The primary method of construction is open trench; however, there are several pipeline sections requiring jack and bore, or horizontal directional drilling. Minimum depth of pipe cover is anticipated at 5 feet. The District prefers a conservative depth for agricultural land to avoid damage to the pipeline during tilling and farming activities.

5.2.1 HDD and Jack and Bore

Approximately 5 bores will be done under roadways and railroad crossings. The maximum bore length is 300 feet for a total of 1,250 feet of jack and bore construction.

Construction of the natural gas pipeline under the Cosumnes River, Cosumnes River Preserve, Badger Creek, and Laguna Creek includes the activities involved in HDD. The HDD is expected to avoid most impacts to sensitive environmental habitat such as vernal pools, wetlands, and riparian habitat that support special-status species. According to current plans, four directional drills will be needed, totaling approximately 3,000 feet. The maximum directional drill is about 2,000 feet. This construction requires 2 set up locations at either end of the drills that are approximately 150 feet long and 100 feet wide.

Direct impacts to the aquatic and riparian habitat within the waterways corridor will be avoided with the use of HDD. A state-of-the-art HDD guidance system will be used to avoid cutting or removing vegetation. Temporary potential impacts to riparian vegetation and aquatic species could occur if inadvertent returns of drilling mud (most often referred to as a "frac-out") escapes through a fissure in the soil structure to the surface. A frac-out contingency plan will be developed to minimize impacts from inadvertent returns of drilling mud and is presented in Appendix D.

5.2.2 Open Cut Trenching

The remaining portion of the gas pipeline will be constructed by using the conventional open cut trench method. This method requires a trench approximately 3 to 7 feet wide and a minimum of 5 feet deep cover. Open trenches will only be covered in areas that require special control for people. Many wildlife species are attracted to confined spaces such as covered trenches. All trenches left open at the end of the day will be required to have

appropriate egress (sloped trench walls) to allow trapped wildlife to escape. If an animal becomes trapped and cannot escape, the Designated Biologist must be called for guidance and/or relocation of the animal.

5.3 Implementation Areas

Mitigation measures will be implemented in the project areas (implementation areas) that include those surface land areas that will be permanently or temporarily disturbed during construction, operation, and/or maintenance of the CPP facility. These areas include the CPP site footprint and all temporary laydown, staging, and horizontal directional drill setup areas; access roads; and construction zones for the stormwater pond, water supply, water discharge, natural gas pipeline, and electric transmission line alignments.

Sensitive biological resources in the implementation areas consist of special-status species and the habitats that support them. Special-status species that could occur in the CPP project area and vicinity were identified by the USFWS, NMFS, CDFG, California Native Plant Society (CNPS), and from field surveys conducted during the AFC impact analysis for the project. Wetlands within the project area were delineated according to the USACE 1987 wetland delineation procedure.

Figure 5-2 depicts an aerial photograph with proposed project features overlaid on the site. Figures 5-3athrough xx show specific project features and the biological habitats in the project construction areas, locations that support special status species, areas of permanent and temporary project impacts, revegetation areas, avoidance areas, and areas requiring environmental permits. Figures 5-4a through zz show the resources along the gas pipeline route. [Note: these figures are have not been prepared and are subject to change.]

5.4 Overall Construction Restrictions within CPP Project Areas

The measures listed below must be followed during construction of CPP to minimize impacts to sensitive biological resources. In addition, Table 5-2 presents specific work windows established by agencies for special-status species that could occur in the project area.

- No ground disturbance will begin in any CPP construction area until the Biological Monitor has cleared the area for sensitive plants and wildlife.
- All construction workers will be given the Worker Environmental Awareness Training (WEAT) before allowed on the construction sites.
- All trees that require removal will be removed before the start of nesting season (by February 1) prior to construction or after nesting is complete (September 1).

TABLE 5-2.
Established Work Windows for Special-Status Species in the CPP Project Area.

Species name	Possible Location (mile marker)	Active Period	Construction Window
Swainson's hawk	12 to 15 Areas with nest trees	March 1 to August 15	August to February near active nest sites
California tiger salamander	.() Farm ponds in south county area, that persist for more than 12 weeks.	April to October	November through March in known locations
Giant garter snake	12 to 14.5 (Cosumnes River and Preserve)	May to October	November through April
Burrowing owl	0.0 – 0.8 (Any potential nest burrows)	March to August	September to February
Western pond turtle	3.8 (UPRR & Franklin Rd crossing)	April to October	November to March
Valley elderberry longhorn beetle	MP 0.1 – 3 (Any elderberry tree locations)	Spring to Fall	Any
Chinook salmon and steelhead	Cosumnes River and tributaries	November to June	July through October
Sacramento splittail	Cosumnes River and tributaries	December to July	August through November

- No construction access will be allowed within the riparian corridor (defined by the outer dripline of trees or top of bank), .except to survey, monitor or respond to HDD impacts.
- Construction Zone Limits will be set up prior to ground disturbance at the CPP site and sensitive project disturbance areas. Construction zone limits apply to the area of immediate surface disturbance as well as any adjacent areas used by vehicles and workers. All construction zones will be identified, marked, and fenced by the on-site construction engineer in consultation with the Designated Biologist or Biological Monitor. Silt fencing and/or high visibility orange fencing will be installed around the perimeter of the work area to mark the construction zone limits and to prevent construction debris and runoff from entering waterways.
- A Biological Monitor will be onsite during initial ground-breaking activities to conduct preconstruction clearance surveys, to salvage and relocate wildlife, and to monitor activities in or near sensitive habitats (waterways, riparian areas, potential nest areas).
- If additional construction is needed in areas not previously surveyed for biological resource impacts or approved by the Designated Biologist, these areas will not be disturbed until it is determined that the disturbance will not cause significant impacts. The Designated Biologist will obtain concurrence from the CEC (and other agencies, if required) of the project changes and document approvals in writing through the Plan Modification Process (see Section 3).
- Construction activities will use the protection measures described in the Erosion Control and Revegetation Plan (Appendix C) and/or contractor's erosion control plan.

5.5 Habitat Compensation

Based on an evaluation of the opportunities and constraints of mitigation, the District proposes to implement one or more of the following measures to compensate for permanent loss of wetlands and habitat for special-status species from construction of the CPP facility. Final habitat compensation requirements will be determined through formal consultations with USFWS, NMFS, and CDFG with oversight from CEC.

- Acquire and preserve, in perpetuity, __-acres of vernal habitat for special-status species if determined necessary through formal consultation with USFWS, NMFS, and CDFG.
- Provide an endowment fund for the costs of management and monitoring of the preserved habitats for the life of the CPP project (expected 30 years).
- Have _____ hold the trust and endowment fund in perpetuity.

5.6 Special-Status Species within the CPP Project Area

No special-status plant or animal species were observed on the CPP site during field surveys; however, several species potentially occurring in the CPP project site area include:

- Vernal pool fairy shrimp and vernal pool tadpole shrimp could occur in vernal poolnorth of and adjacent to the CPP site
- Fish and other aquatic species including Western pond turtle, chinook salmon, Central Valley steelhead, Sacramento splittail could occur in the Cosumnes River and tributaries
- California tiger salamander dispersal habitat may be present on the CPP site
- Giant garter snake could occur in tributaries to Cosumnes River
- Swainson's hawk foraging habitat occurs along the gas pipeline west of theCPP site
- Burrowing owls could occur in mammal burrows along railroad tracks, creek banks and agriculture fields
- Nesting birds could occur in the riparian habitats along the Cosumnes River and tributaries.
- Migratory birds could use the CPP site as winter forage habitat

Specific protection and mitigation measures for these species are presented below.

5.6.1 Mitigation for Vernal Pool Plants and Invertebrates

The grassy plateau east of Rancho Seco supports many vernal pools in a nearly natural state. Between the project site and Rancho Seco, there is a complex of degraded swales that have some vernal pool characteristics, and may support some vernal pool fauna. that is crossed by existing power lines and underground pipelines. Transmission lines and water supply lines for the CPP project would also cross through this area. This particular complex of vernal pools is at a lower elevation than those east of the reservoir, and appear to support sparse vegetation and turbid water indicating a degraded condition. There are no known

localities on the CPP site that would be directly affected, but because the species is readily transferred among pools in close proximity, any vernal pools and 250-foot buffer areas around the pools in the project vicinity are considered by the USFWS as potential habitat. The gas pipeline alignment crosses many railroad-berm ditches, in the vicinity of Franklin Boulevard that have hydrology similar to vernal pools, and vernal pool plants and invertebrates may be present.

Mitigation would consist of providing off-site habitat and management of existing or created vernal pools to support the resources that would be affected by the project. A Biological Assessment (BA) would be prepared under formal Section 7 consultation for the CPP project that describes project impacts and a proposed mitigation. The BA would be submitted by the lead federal agency to the USFWS who would prepare a Biological Opinion limiting the amount of incidental take of listed species. If the vernal pool is found to be under the jurisdiction of the USACE through a wetland delineation, mitigation for loss of wetlands would be incorporated into the vernal pool species mitigation. The final mitigation requirements for the vernal pool and vernal pool species would be negotiated between the USACE, USFWS, and the District.

5.6.2 Protection of Fish and Aquatic Species in Waterways

The Cosumnes River and tributaries support chinook salmon, steelhead, and Sacramento splittail, as well as invertebrates that support these species. Protection measures were developed for CPP to prevent sediments and construction debris from entering waterways (see erosion control plan in Appendix C). Silt fencing and/or other sediment controls will be used at each construction location, including the stormwater and wastewater outfalls. Stormwater and construction water from the CPP site during operation will be discharged under a NPDES permit. The discharge will be monitored according to the requirements of the permit.

The use of HDD for constructing the gas pipeline under the Cosumnes River, Badger and Laguna creeks, and Cosumnes River Nature Preserve will minimize impacts to the aquatic and riparian habitat. However, potential impacts could occur if inadvertent returns of drilling mud (frac-out) enter the waterway through a fissure or crack in the soils. The drilling mud (normally bentonite) is a non-toxic clay material often used as an impervious layer in wetland construction and by farmers as a soil enhancement. When drilling muds enter a waterway, it can smother benthic invertebrates, aquatic plants, fish eggs, and young fish. A contingency plan will be developed for the CPP HDD activities and is presented in Appendix D. The plan outlines how an inadvertent return of drilling mud will be minimized, contained, and cleaned up. It also presents emergency contact numbers and a spill response team to contact in case of excessive spills.

A Biological Monitor will be on-site or on-call during the HDD and will assist SMUD in monitoring for frac-outs during the drilling operation. The Biological Monitor will consult with CDFG and assist in coordinating the containment and clean up of spilled drilling mud.

- HDD equipment and materials will be located at least ____ feet from Cosumnes River and Badger and Laguna creeks riparian corridors.
- Construction under the waterways should occur during the dry season (July through October) when salmon and steelhead are not expected to be in the river and creeks.

5.6.3 Protection for California Tiger salamander and Western pond turtle,

Appropriate breeding habitat for California tiger salamander and western pond turtle was not identified on the CPP site or within the project construction zones for the gas pipeline and water supply alignments; however, potential dispersal habitat exists on the site and along portions of the pipeline. In addition, the underground burrows on the gas pipeline alignment could provide upland aestivation and shelter habitat and possible nesting habitat for turtles. The USFWS, CDFG, and the CEC were consulted for appropriate measures that would minimize impacts to listed species. Protection measures were developed for CPP to prevent sediments and construction debris from entering waterways (see erosion control plan in Appendix D). The mitigation and protection measures proposed for the project to avoid impacts to special-status salamanders and turtles include:

1. Conduct preconstruction habitat assessments within the project construction zones to locate areas where salamanders and turtles could occur.
2. Find and relocate individual animals prior to ground disturbance activities
3. Set up construction zone limits at the creek banks, using silt fencing to restrict access by salamanders and turtles into construction areas and place signage indicating the area is protected and not accessible for construction equipment and materials
4. Relocate any salamander, turtle, or other wildlife to safe areas outside the construction zone limits
5. Provide a qualified Biological Monitor during construction within potential tiger salamander and western pond turtle habitats
6. Monitor stormwater discharge from the site for water quality parameters identified in the NPDES permit that protect beneficial uses

5.6.4 Protection Measures for Giant Garter Snake

Appropriate habitat for giant garter snake (GGS) comprises dense cattail or bulrush cover, with downed woody debris and partial shading to provide thermal cover. Wetland habitats on the project site do not have permanent water and dense cover that would support fish or highly aquatic species such as the giant garter snake; however, it is known to occur in the Cosumnes River Nature Preserve, and could be present in Badger Creek, Laguna Creek, or connected waterways that support appropriate habitat. The gas pipeline crosses or passes close to wetland and marsh habitats ranging from completely aquatic sites (Cosumnes River, Badger Creek, Laguna Creek), cattail and bullrush marsh (Cosumnes River), farm ponds (Arno Road, Valensin Road), roadside ditches and swales (near town of Franklin, south of CCF), and vernal pools.

Giant garter snakes are actively foraging in warm months from May through September and typically hibernate in underground burrows (hibernacula) from October through April and are highly susceptible to earth moving equipment during this time. Impacts to giant garter snakes can occur from the excavation of streams and/or irrigation canals and hibernacula during hibernation periods.

No known giant garter snake habitat will be lost from construction of the project and no off-site habitat compensation is proposed; however, the following protection measures for giant garter snake will be implemented:

1. Preconstruction field sweeps (conducted under CDFG and USFWS guidelines) will be conducted in project construction areas where suitable habitat occurs, 24 hours before earth moving activities begin at that site. If giant garter snakes are found during the sweep, the designated biologist will make noise and vibrations to repel snakes from the construction area and notify the USFWS of the sighting using the giant garter snake monitoring form (Figure ___). Removal of snakes will only be conducted with agency authorization.
2. Snake fences will be installed where necessary around construction areas where snakes are likely to be found.
3. The Designated Biologist will be on-site during construction activities in areas where snakes are found.
4. Pipeline trenches will be designed with appropriate trench egress to prevent snakes from becoming trapped. If a snake should become trapped, the designated biologist will notify the USFWS and with authorization and/or assistance remove the snake and relocate it to a safe area.
5. The Designated Biologist will supervise construction activities in areas that could contain giant garter snakes and provide the CEC with written records in the Monthly Compliance Reports documenting the construction monitoring activities.
6. CPP will trench and auger within 200 feet of waterways only from May through September, unless otherwise approved by USFWS.

5.6.5 Mitigation and Protection Measures for Swainson's hawk

Swainson's hawks nest in large riparian cottonwoods, oaks, and other large trees and forage over short-grass prairies and farm fields up to 10 miles from the nest. Swainson's hawks are sensitive to disturbance during nesting and CDFG recommends a 0.5-mile buffer between construction and active nests. Swainson's hawks could potentially nest in the riparian trees in the mine tailings 0.3 mile east of the project site, or in the trees surrounding Rancho Seco Reservoir. Several areas along the gas pipeline route have the potential for nests, particularly in the Cosumnes Nature Preserve. A Swainson's hawk could nest in any of these in any year. If present, construction at the project site could potentially cause nest abandonment.

Mitigation and protection measures for Swainson's hawk include:

- Implement nest surveys within 0.5 mile of project features in early spring 2003 to determine use by Swainson's hawk.
- If project features are within 0.5 mile of Swainson's hawk nesting, avoid construction within 0.5 mile during nesting season, if feasible. If construction does occur within 0.5 mile of an active nest site consultation with CDFG may require a full-time Biological

Monitor while birds are on the nest. Temporary disturbance from construction may be allowed with monitoring by the Biological Monitor.

5.6.6 Protection Measures for Western Burrowing Owl

The burrowing owl is known to nest in the Central Valley. Although none wasobserved during field surveys of the site, railroad berms, canal banks and agricultural areas near the project site may contain suitable habitat for burrowing owls, if squirrels and burrows are present.

The following measures would minimize the potential impacts to burrowing owls:

- Preconstruction surveys of pipeline and linear facilities would be conducted in the spring to determine whether the ground squirrel burrows are occupied by burrowing owls.
- Protect active nest burrows with a 250-foot buffer during the breeding season (February 1 through August 31).
- Conduct passive relocation prior to construction if winter burrows are found before February 1 and/or restrict construction activities within 150 feet during non-breeding season.
- Provide habitat compensation for any active nest burrow that could not be avoided during construction through consultation with CDFG.

5.6.7 Protection for Nesting and Foraging Birds

Raptors, herons, egrets, waterfowl, and belted kingfisher are resident and migratory species occurring in the CPP project area, and are protected under the Migratory Bird Treaty Act and California Fish and Game Code. Disturbance of nest sites , which is prohibited under Section 3503.5 of the Fish and Game Code, could result in abandonment of eggs or young.. Since the newly proposed transmission lines are adjacent and parallel to existing transmission lines, this potential is minimized.

Preconstruction surveys will be conducted for nesting raptors within 500 feet of construction activities. Surveys will also be conducted within 100 feet on either side of the entire gas pipeline alignment. Resident birds often begin nesting as early as February in California. Nest searches will be conducted in December/January (if not earlier) before site construction begins and the vegetation within laydown and construction areas will be removed and/or mowed by February 1st to minimize the potential for birds to nest within the construction areas. If nests are found with no eggs or young, the nest will be removed. If nesting birds with eggs or young are found during the surveys, the Biological Monitor will coordinate with the Designated Biologist and CDFG for possible relocation or rehabilitation at an approved wildlife rehabilitation center.

Field surveys to identify active raptor nest sites will be conducted in the spring prior to construction. If nest sites are found within 500 feet of construction areas, the Designated Biologist will implement mitigation measures appropriate to the circumstances. In most cases, a construction zone limit will be placed around the nest site at a distance of not less

than 500 feet. If an exclusion zone cannot reasonably be implemented at this distance, the following measures may be implemented:

1. The District may postpone construction in that area until young are fledged, or
2. Provide a Biological Monitor to monitor the birds on the nest and stop construction if it appears that the birds will abandon the nest or young, or
3. Consult with the CDFG if construction appears to jeopardize the nesting success and provide for the artificial rearing of eggs or young by qualified staff.

Construction in the forage areas of breeding birds will also be monitored to determine if disturbance could cause failure of birds to adequately provide for themselves and their young. The Designated Biologist will stop work if it appears the construction activities will obviously impede reproductive success.

TABLE 5-1
Summary of Permanent and Temporary CPP Project Impacts on Biological Resources During Construction

Location	Project Work	Construction Zone Size	Time Requirements	Habitat Type	Sensitive Biological Resources	Impacts	
						Temporary	Permanent
Power Plant Site	Grading for footprint construction	30 acres	Start 4th quarter of 2002	Pasture/ annual grassland, seasonal swale, seasonal marsh, vernal pool	Vernal pool fairy shrimp Plants in wetlands	None. All of site would be converted from habitat	Potential loss of 30 acres of annual grassland habitat. Relocation of 2,800 feet of seasonal swale and seasonal marsh. Elimination of < 0.01 acre of vernal pool habitat (VP9)
Stormwater detention pond	Grade berms into place surrounding detention pond	1.5 acres, approximately 560 ft. x 160 ft.	4th Qtr 2002	Pasture/ annual grassland,	Seasonal swale	Clear and grade 2 acres of vegetation, expected to recover to annual grassland. Potential sedimentation to creek during construction	Approximately 0.5 acre of habitat would be permanently converted from annual grassland to berms surrounding detention pond
Construction laydown area, south of Clay East Road	Construct compacted gravel pad	20 acres	4th Qtr 2002	Pasture/ annual grassland	None	Grading and compaction of up to 20 acres	None. Laydown area would be restored to pre-construction conditions
Natural gas pipeline from Carson Cogen to project site.	Gas pipeline trench	26-miles of trench with 3,000 ft HDD. 75' construction right of way, 25' permanent easement	2nd Qtr 2002	Road, railroad berm, pasture, annual grassland, vineyard	Vernal pools, Swainson's hawk, wetlands, Cosumnes River, Laguna Creek, Badger Creek	Disturbance of 240 acres of various habitat	Loss of 4 acres of agricultural fields
Water supply line	Pipeline trench	800-foot pipeline routed south from Rancho Seco Plant to site. 75-foot-wide	Summer 2003	Pasture, annual grassland, vernal pools	Vernal pool species, wetlands	Disturbance of 1.3 acres of disturbed grasslands	None. Pipeline area would be restored to pre-construction

TABLE 5-1
Summary of Permanent and Temporary CPP Project Impacts on Biological Resources During Construction

Location	Project Work	Construction Zone Size	Time Requirements	Habitat Type	Sensitive Biological Resources	Impacts	
						Temporary	Permanent
		construction easement, no permanent corridor					conditions
Wastewater discharge	Pipeline trench	200 feet long to Clay Creek. 75-foot-wide construction easement, 51-foot-wide permanent disturbance at outfall.	Summer 2003	Pasture, annual grassland, seasonal swale	Vernal pools, sedimentation to surface waters	Disturbance of 0.3 acres of disturbed grasslands	Conversion of < 0.1 acres for outfall structure to Clay Creek
Transmission towers	Transmission tower footings, construction and maintenance	800 feet long from CPP to Rancho Seco Plant. 75-foot-wide construction easement, 25-foot-wide permanent easement.	Summer 2003	Pasture, annual grassland, seasonal swale	Vernal pools, sedimentation to surface waters	Disturbance of 0.3 acres of disturbed grasslands	Conversion of <0.1 acre for transmission tower footings
Emergency/ Fire Water Supply Line	Pipeline trench	200 feet long to RSP-to-RS Reservoir pipeline 75-foot-wide construction easement.	Summer 2003	Pasture, annual grassland, seasonal swale	Vernal pools, sedimentation to surface waters	Disturbance of 0.3 acres of disturbed grasslands	None
Project site and along pipeline	Water disposal for dust control and pipeline testing	Project site (30 acres), laydown area (20 acres), pipeline corridor (240 acres)	4th Qtr 2002 through 4th Qtr 2004	Graded annual grassland, agricultural or roadside berms	Erosion/ Sedimentation to surface waters. Disposal of pipeline test water	Length of pipeline and project site during construction	None

GENERAL NOTES

1. CREEK DIVERSION, DETENTION POND AND STABILIZED CONSTUCTION ENTRANCES SHALL BE CONSTRUCTED PRIOR TO THE COMMENCEMENT OF GRADING ACTIVITIES AND SHALL BE MAINTAINED THROUGHOUT THE COURSE OF THE PROJECT.

   CREEK DIVERSION AND DETENTION POND EMBANKMENTS SHALL BE SEEDED. ALL OTHER EMBANKMENTS SHALL BE PROTECTED DURING CONSTRUCTION WITH FILTER FABRIC ON SLOPE.

3. DETENTION POND SHALL BE USED AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION.

4. STABILIZED CONSTRUCTION ENTRANCES SHALL BE A MINIMUM OF 20 FEET WIDE, 50 FEET LONG AND SHALL CONSIST OF A 6-INCH THICK MINIMUM LAYER OF 2-INCH ANGULAR CRUSHED AGGREGATE COMPACTED IN PLACE, UNDERLAIN WITH A GEOTEXTILE FILTER FABRIC.

5. THE ROADS ADJACENT TO THE SITE SHALL BE KEPT FREE OF DIRT, MUD AND DEBRIS.

6. WHEN WASHING OF WHEELS IS REQUIRED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE/ROCK AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

7. TOPSOIL STOCKPILES SHALL BE LOCATED TO AVOID EROSION OF SAID STOCKPILES ONTO OFFSITE AREAS. STOCKPILES TO REMAIN LONGER THAN TWELVE MONTHS SHALL BE SEEDED.

8. DRAWING SHOWS INITIAL DIVERSION DITCHES/SWALES AROUND SITE PERIMETER TO PREVENT/INTERCEPT STORMWATER RUNOFF TO OFFSITE AREAS. DITCHES/SWALES SHALL BE RELOCATED AS REQUIRED DURING THE DIFFERENT STAGES OF CONSTRUCTION.

9. INSPECTION AND MAINTENANCE OF ALL EROSION CONTROL FEATURES SHALL BE CONDUCTED PERIODICALLY AS WELL AS AFTER EACH RAIN.

N

150 0 150 Feet

SCALE IS APPROXIMATE

NO	REVISIONS	DATE	BY	CHK	DSNR	APPR
A	ISSUED FOR APPROVAL	2/19/02	JEH			

UTILITY ENGINEERING

HEADQUARTERS
AT&T TOWER, 901 MARQUETTE, MINNEAPOLIS, MINNESOTA 55402
AMARILLO, TEXAS GREYTOR, CONNECTICUT DENVER, COLORADO

SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
The Power To Do More

COSUMNES POWER PLANT

DRAWN	DESIGNED		CHECKED
APPROVED	CADD DRAWING NUMBER	SHEET	REV
APPROVED			

FIGURE 5-1
PROJECT FEATURES
COSUMNES POWER PLANT
APPLICATION FOR CERTIFICATION

CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\Rancho_seco\rancho_seco_cad.apr fig_5-1project_feat.pdf 8:28 p.m. 03-15-2002

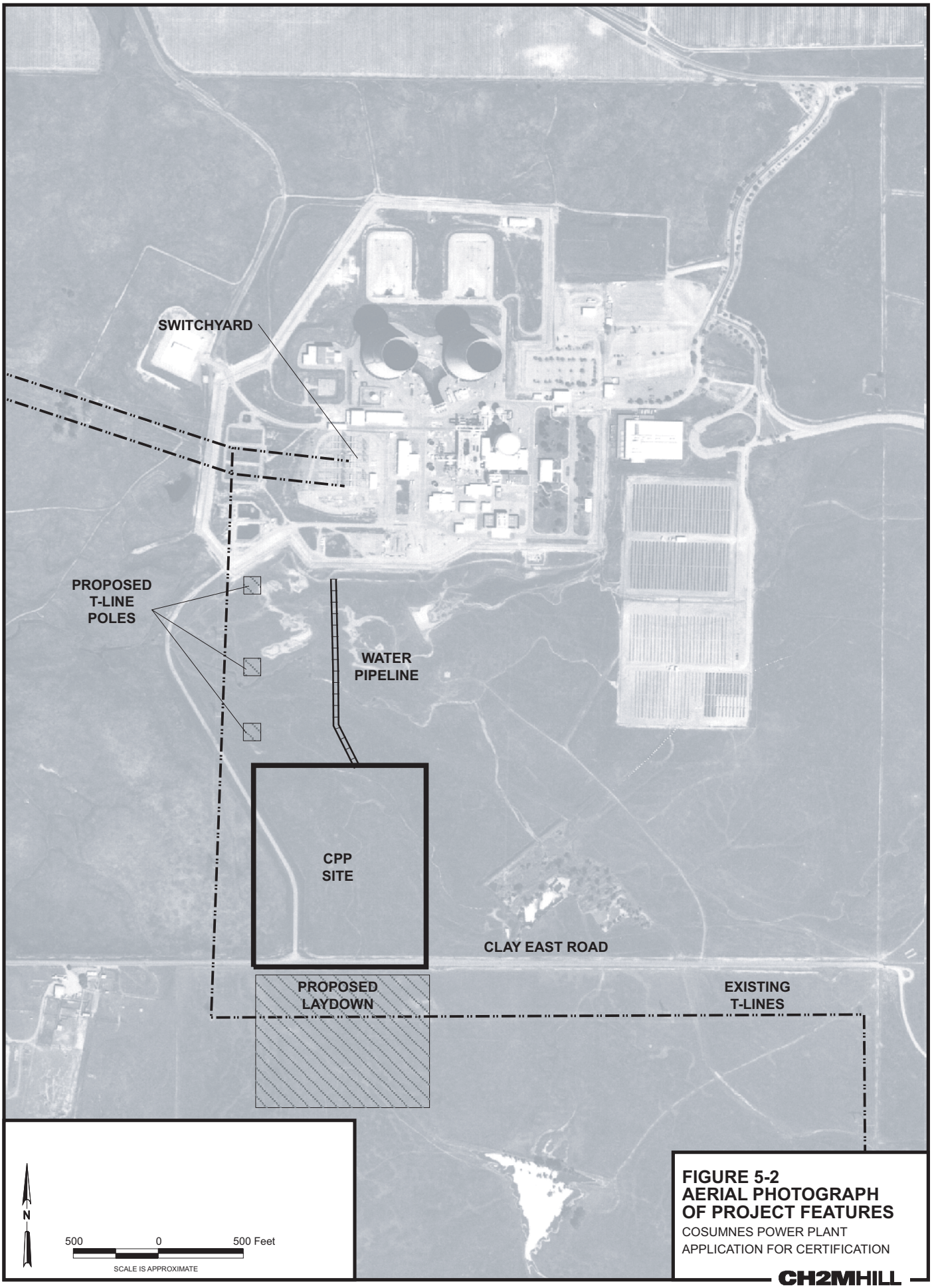

FIGURE 5-2
AERIAL PHOTOGRAPH OF PROJECT FEATURES
COSUMNES POWER PLANT
APPLICATION FOR CERTIFICATION

CH2MHILL

INSERT FIGURES 5-3 through 5-4

6.0 Erosion Control and Revegetation of Disturbed Areas

Sediment control measures will be used to minimize the local and off-site transport of detached particles that would not normally be in the natural channel system. The intent of such measures is to slow down the flow and promote deposition in controlled locations or to trap the sediment either by capturing and retaining the runoff or by filtering the flow to retain the sediment. The following measures will be used to control sediment transport.

- Straw bales, silt fences, and sand bag barriers will be used to slow flows and promote sediment deposition.
- Sediment traps and sediment basins collect sediment and prevent it from being transported further downstream.
- Vegetative buffer strips leave existing vegetation adjacent to natural stream channels or downslope from cleared areas to retard flow and capture sediment carried by sheet flow.

Most, if not all, of these measures will be specified under the required NPDES General Construction Permit for the site and the Storm Water Pollution Prevention Plan (SWPPP) that will be prepared as part of the NPDES permit application. The SWPPP will include a plan drawing of the site showing where specific types of erosion and sediment control measures will be used, detail drawings of each measure, and a list of specifications provided to the contractor about how each of these measures is to be implemented or installed (Earth Tech, 2001).

The performance criteria for erosion and sediment control measures will include:

- Grading surfaces so that runoff is directed to sediment control structures
- Scheduling grading during the dry season (March 15 through October 15 [Western Regional Climate Center, 1999])
- Installing erosion-control structures and hydroseed prior to the rainy season
- Inspecting and maintaining erosion control structures regularly
- Designing erosion control measures and structures according to the standards of Sacramento County

The selected erosion and sediment control measures will be applied to limit or prevent soil erosion (the detachment of soil particles) and manage or control the movement of mobilized sediment. Additionally, controlling surface runoff can limit the amount of erosion caused by concentrated flows. The following measures will be used to control flow or protect against channelized flow.

- Constructed drainage swales will be used to collect surface runoff and direct it away from disturbed surfaces
- Sandbags and small check dams will be used to control and direct flows away from disturbed surfaces, as well as to contain sediment particles that are dislodged
- Earthen dikes will be used to slow the flow of water and reduce its potential for erosion as well as to contain sediment
- Subsurface drains will be used to reduce the buildup of shallow subsurface water and reduce the potential slumping and sloughing of large amounts of soil which would then be available for erosion by surface water
- Riprap protects vulnerable channel or slope surfaces from the erosive forces of concentrated flows.

If any of these activities mentioned above require further authorization from regulatory agencies, permitting will be expedited during the mitigation process.

The reestablishment of vegetation is clearly of prime importance for preventing erosion, and the following methods will be used in uplands adjacent to the wetlands to promote new vegetative growth or protect bare ground surfaces until vegetation can be reestablished. Disturbed areas will be restored to preconstruction contours and revegetated with native and non-native species for erosion control.

- Areas to be restored will be restored as soon as construction is complete and seeded or planted before the rainy season begins.
- Hydroseeding with a soil binder will provide seeds for regrowth of either temporary or permanent vegetation and will help to stabilize uncovered ground surfaces
- Sod stabilization places already established grass as a cover
- Mulching, fiber mats, or other erosion control blankets cover and protect bare surfaces; such measures can include seeds or are used to trap seeds from local plants.

7.0 Implementation Schedule

Implementation of the mitigation measures outlined in this BRMIMP will be conducted throughout the construction and operation of the CPP project. Table 7-1 outlines a relative schedule for implementation of mitigation measures.

TABLE 7-1
Relative Schedule for Implementation of Mitigation Measures

Task	Timing
Construction mitigation monitoring by Designated Biologist	April 2003 through September 2007 (assuming construction of both phases)
Worker environmental awareness training	At project initiation and when new construction workers come onsite.
Preconstruction surveys	At each construction area before disturbance occurs and before nesting season for raptors each year of construction
Construction zone limits	Prior to any surface disturbance
Timing restrictions on construction	At initiation of project and after preconstruction surveys
Habitat compensation	Prior to project construction, expected fourth quarter of 2002.
Erosion control and revegetation of disturbed areas	Erosion control during construction and revegetation in October after temporary disturbance
Monitoring plans and reports	Plans available prior to construction of transmission line for birds and before construction of CPP for annual monitoring reports due as identified below
Summary Report for Implementation and Success of Mitigation Measures	30 days after construction completion

8.0 Implementation Monitoring/Verification Program

Verification of mitigation will be documented on daily monitoring logs, Monthly Compliance Reports, and in the final BRMIMP Summary of Mitigation Measures for the CPP Project that will be submitted to the CEC within 30 days after completion of construction. The avian collision and onsite wetland monitoring and annual reports will continue after the final BRMIMP Summary report for the indicated duration.

Compliance of each mitigation measure will be monitored by the Designated Biologist according to the schedule in Table 8-1 and documented on compliance verification forms or daily logs (Figure 8-1) for each site visit. The daily forms will record where, when, and how construction activities are performed and whether compliance was met. Monthly Compliance Reports will summarize the activities for each month. The summaries will include a discussion of whether the mitigation measures were successful, compared to the success criteria where applicable. It will also include all of the plan modifications and remedial measures taken if the success criteria were not met during the mitigation monitoring process. Table 8-1 outlines the performance standards or success criteria for each mitigation measure.

TABLE 8-1
Monitoring Tasks and Criteria that Determine Successful Implementation of Mitigation Measures

Mitigation Measure	Monitoring Type	Monitoring Duration	Monitoring Frequency	Success Criteria
Construction zone limits	Onsite observation	Throughout construction	Daily or as needed	No adverse impact to surrounding habitats
Preconstruction surveys	Direct observation	Throughout construction	Daily for ground disturbance and 6 times each spring for raptor nests	Summary in monthly compliance report
Habitat Compensation	Payment	In perpetuity	Once	Copy of receipt to CEC
Worker Environmental Awareness Training	Direct observation of attendance	Throughout construction for new employees	At start of project construction	Signed affidavits
Erosion Control and Revegetation Plan	Direct observation of performance	2 years after seeding	Annually for 2 years	Successful growth of vegetation in planted areas

A master compliance verification form will be managed by the Designated Biologist and included in the final compliance report to the CEC CPM (Figure 8-2).

Figure 8-1. Daily Compliance Verification Report Form

COMPLIANCE VERIFICATION REPORT Report Number:		
Project:	Date:	
Location:	Arrival time:	Departure time:
Responsible party:		
Compliance monitor:	Discipline:	
Monitored mitigation measure:		
Frequency of monitoring:		
Compliance criteria:		
Compliance: ☐ Acceptable	☐ Unacceptable:	
	☐ Remedial action implemented	
	☐ Require work stop	
	☐ Follow-up required	
Activity:		
Observations:		
Recommendations:		
Report approval:		
Print name:	Signature:	
Receipt acknowledged by resident construction supervisor:		
Print name:	Signature:	
Date: Time:		
Comments/Actions:		
Data entered into Monthly Monitoring Report:		

Figure 8-2. Master Compliance Verification Report Form

MASTER COMPLIANCE VERIFICATION REPORT								
Project: Cosumnes Power Plant				Location: Sacramento County, California				
Project Owner: Sacramento Municipal Utility District								
Mitigation Measure	**Responsible Party for Implementation**	**Date(s) for Implementation**	**Compliance Criteria**	**Date Completed**	**Signature of Monitor**	**Compliance Verification Report(s)**	**Responsible Oversight Agency**	**Remarks**
HABITAT COMPENSATION								
SJKF								
PRECONSTRUCTION SURVEYS (2002)								
CVEC site and access								
Gas pipeline								
Water pipelines								
Transmission line								
Fresno Slough								
PRECONSTRUCTION SURVEYS (2003)								
CVEC site and access								
Gas pipeline								
Water pipelines								
Transmission line								
Fresno Slough								
CONSTRUCTION ZONE LIMITS								
CVEC site and access								
Gas pipeline								
Water pipelines								
Transmission line								
Fresno Slough								
WORKER ENVIRONMENTAL AWARENESS TRAINING								
2002								
2003								
2004								
EROSION CONTROL AND REVEGETATION PLAN								
2002								
2003								
2004								
AVIAN COLLISION MONITORING (Transmission Line and Towers)								
2004								
2005								
2006								
ON-SITE REVEGETATION MONITORING								
2004								
2005								
2006								
2007								

9.0 References

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